

## DEPARTMENT OF GENERAL SERVICES

**TELECOMMUNICATIONS DIVISION**

601 SEQUOIA PACIFIC BOULEVARD  
SACRAMENTO, CA 95814-0282  
(916) 657-9903



DOCKET FILE COPY ORIGINAL

June 20, 1997

RECEIVED

JUN 23 1997

FCC FILE COPY

Mr. William F. Caton, Secretary  
Federal Communications Commission  
1919 M Street, NW  
Washington, DC 20554-0001

Dear Mr. Caton:

The State of California, Department of General Services, Telecommunications Division herein submits comments in the matter of the First Report and Order and Further Notice of Proposed Rule Making with regard to ET Docket 95-18. In accordance with Commission requirements, enclosed are the original and nine copies of our comments.

Sincerely,

PETE WANZENRIED, Chief  
Public Safety Radio Services

PW:GSN:ro

Enclosures

No. of Copies rec'd 0+9  
List ABOVE

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, D.C. 20554

RECEIVED

JUN 23 1997

FCC MAIL ROOM

In the matter of )  
 )  
Amendment of Section 2.106 of the )  
Commission Rules to Allocate Spectrum )  
at 2 GHz for Use by the Mobile )  
Satellite Service )

ET Docket 95-18

To: The Commission

**COMMENTS OF THE STATE OF CALIFORNIA TO  
FIRST REPORT AND ORDER AND  
FURTHER NOTICE OF PROPOSED RULE MAKING**

The State of California (State) hereby submits the following Comments to the First Report and Order and Further Notice of Proposed Rule Making in the above-captioned proceeding. The State supports the actions taken by the Commission in the First Report and Order and recommends that it use the same procedures for relocation of incumbent users affected by reallocation of spectrum for MSS users as was used for relocation of incumbent users affected by reallocation of spectrum for PCS services. The State further recommends that incumbent users of the 2130-2150/2180-2200 MHz spectrum be relocated on a "per-path" basis rather than relocating only those users in the 2180/2200 MHz portion of the spectrum as proposed in this proceeding.

## I. Introduction and Background

The California Department of General Services, Telecommunications Division operates a large microwave system extending throughout the State of California. This system is used by various state agencies to interconnect and control land mobile radio communications systems used in public safety operations and for other critical communications. Currently, the system comprises 365 paths or hops operating in various frequency bands, including 95 paths in the 2130-2150/2180-2200 MHz band. Prior to reallocation of the 1850-1990 MHz band for "PCS" systems, the State's Public Safety Microwave System had nine paths operating in that band. To date, one of the nine paths has been deleted and seven others are being converted to other bands through agreements made with "PCS" providers. Changeout of the ninth path is pending resolution of a technical problem. Thus, the State of California has experience in replacing existing 2 GHz microwave service with other frequency bands and the impact upon the user of making such conversions.

The Commission, in ET Docket 92-9, reallocated the 1850-1990 MHz and the 2110-2200 MHz bands for new emerging telecommunications technologies. In recognition of the large number of incumbent microwave facilities which would be displaced by this reallocation, the Commission's rules require that licensees of new technologies must compensate incumbents for the cost of relocating to other frequencies. The compensation for relocation is to be determined through a negotiation

process with specified voluntary and mandatory negotiation periods. This process has been in effect for three years with regard to the "PCS" band at 1850-1990 MHz, and it has been the State's experience the process works well.

In the First Report and Order in this proceeding, the Commission reallocated the 2165-2200 MHz band for MSS downlinks. While this reallocation affects only one half of the existing 2.1 GHz fixed microwave band, it effectively eliminates the entire band. This is due to the standardized pairing within the band. Microwave paths, which typically require two-way communications, are allocated on a paired-channel basis with one frequency from the 2130-2150 MHz portion of the band being paired with one frequency from the 2180-2200 MHz portion of the band<sup>1</sup>. The frequencies operate in opposing directions over the path and are selected to minimize interference. Thus, reallocating one half of the band affects the usefulness of the entire band for point-to-point microwave services.

The Commission's First Report and Order included a Further Notice of Rulemaking seeking comments regarding specific relocation procedures to be used for the frequencies reallocated to MSS. In this document, the Commission affirmed the principal that new emerging technology licensees (i.e. MSS providers), not the incumbents, must bear the cost of relocation. The State of California strongly supports this procedure as being fair and reasonable.

---

<sup>1</sup> FCC Rules at Section 101.147(d)

## II. The Relocation Process Should Not Be Changed

The process for relocation of incumbent users in the 1850-1990 MHz "PCS" band has been in effect for nearly three years. It has been the State's experience that this process works well and we can see no reason to change the process. While negotiations to relocate seven of our nine paths in the 1850-1990 MHz band were completed within one year, none of the PCS providers are yet ready to discuss relocation of the ninth path (the eighth path was deleted from the system) due to the projected cost of the relocation. Since the beginning of the "voluntary" negotiation period was triggered by the issuance of "PCS" licenses, we now find ourselves nearing the end of the "voluntary" period willing, ready, and able to negotiate with the PCS providers who themselves are unwilling to discuss relocation of this path. The presumption in the rules is that the incumbent users would be delaying the process as it moves from the "voluntary" to the "mandatory" periods. This is not necessarily true, as illustrated above. While reducing the "voluntary" period to two years and increasing the "mandatory" period to three years would have had little impact upon the negotiations which have been completed for seven of our paths, if such a change were made we would already be one year into the "mandatory" period for the ninth path, and we are not the party delaying the process. Thus, the State of California recommends the Commission maintain the current process of a three-year "voluntary" negotiation period for public safety users followed by a two-year "mandatory" negotiation period.

### III. Microwave Paths Should Be Relocated On A Per-path Basis

In the above-captioned proceeding, the Commission proposes reallocation of only one-half of the fixed microwave 2.1 GHz band, specifically the 2180-2200 MHz portion of the band, leaving intact (for now) the 2130-2150 MHz portion of the band. In the Further Notice of Proposed Rule Making, the Commission asks if they should require relocation of only links in the 2180-200 MHz band, leaving in situate the paired links in the 2130-2150 MHz band. The State of California opposes this proposal.

Microwave hops or paths, typically, operate as bi-directional circuits with one frequency selected from the 2130-2150 MHz portion of the band operating over one direction of the path and a second frequency selected from the 2180-2200 MHz portion of the band operating in the opposite direction. The specific frequencies are selected to minimize interference and are based upon standard channel pairings found in the FCC Rules and Regulations. The standardized pairings of channels is not unique to the 2.1 GHz band, rather it is common to all of the bands allocated for point-to-point microwave services. Thus, the proposal in the Further Notice to leave situate that portion of the link operating in the 2130-2150 MHz portion of the band while relocating that portion of the link operating in the 2180-2200 MHz portion of the band implies destruction of the standardized pairing in the band to which relocation occurs. Thus, if we assume that the 2180-2200 MHz portion of the link were relocated, for instance, to the 5925-6425 MHz band, then the link would be operating with one frequency from the

2130-2150 MHz band, and one frequency from the 5925-6425 MHz band (i.e. a non-standardized pairing). Furthermore, at some time in the future, when the Commission reallocates the 2130-2150 MHz band for some other emerging technology (which it has stated an intent to do), then what guarantee is there that the other half of the standardized pair in the 5925-6425 MHz band will be available for this later relocation. We already are seeing problems with congestion in the relocation of our 1.9 GHz service into other frequency bands and expect that problem to get worse as 2.1 GHz users are relocated. Unless the Commission were to devise some scheme for "protecting" the unused pair in the 5925-6425 MHz band (for example) until it was needed for relocation of the 2130-2150 MHz half of the former 2.1 GHz path, then we firmly believe the other half of the "pair" in the 5925-6425 MHz band will have been assigned to some other user. Through this mechanism, the use of unpaired channels over a single path is likely to continue into perpetuity with the distinct likelihood that the pairing will involve frequencies from widely separated bands. While we recognize the cost impact upon MSS providers of relocating both ends of a 2.1 GHz path when they only need the frequency spectrum associated with one end, we believe maintaining standardized pairing is critical to optimal use of the remaining point-to-point microwave spectrum. Therefore, the State of California strongly recommends against breaking up standardized pairs.

The State of California opposes the relocation of radios operating in the 2180-2200 MHz portion of the spectrum for the following additional reasons. Currently, every

microwave hop or path operates within a single frequency band. This allows the path to operate using a single antenna (or pair of antennas in the case of space diversity systems). If the path were to operate with one frequency in the 2130-2150 MHz band and some frequency selected from one of the other bands, then a second antenna would be needed at each end of the path, one antenna for each of the frequency bands being used on the path. This not only increases the cost of the system for the additional antenna and feedline, but it also places a significantly greater weight and wind load upon the antenna tower, so much so that replacement of the tower may be required. The cost of upgrading the antenna tower is likely to exceed the cost of the radio equipment. Additionally, operating a single path with transmit/receive frequencies selected from widely separated frequency bands will also impact the design of the radio equipment. Currently, manufacturers are able to share use of certain common elements in the design of the transmitter and receiver for a single hop due to the relatively close spacing of the transmit and receive frequencies. This sharing is not likely to be possible if the transmit and receive frequencies are in widely spaced frequency bands. Furthermore, point-to-point microwave terminals typically are installed in equipment enclosures with the transmitter and receiver sharing a common assembly. If the transmitter and receiver were to utilize widely separated frequencies, particularly wherein those frequencies do not follow any standardized pairing, then it is likely that manufacturers will use separate assemblies for the transmitter and receiver. Such a configuration will have a significant impact upon the use of radio vault space, so



much so that some radio vaults may have to be expanded to accommodate the two pieces of equipment. Thus, while it may be technically possible to "crossband" a microwave path, it is neither practical nor reasonable to do so.

#### IV Conclusion

The State of California strongly recommends the Commission maintain the current procedures for relocation of incumbent users of the 2130-2150/2180-2200 MHz band as detailed in Sections 101.69 through 101.81 of the FCC Rules and Regulations. We further recommend the Commission require MSS providers to relocate incumbent users on a "per-path" basis with both ends of the path being relocated simultaneously to an alternative frequency band so as to maintain standardized pairings.

Respectfully submitted,

STATE OF CALIFORNIA

By:



Pete Wanzonried, Chief Public Safety Radio Services  
Department of General Services, Telecommunications Division  
601 Sequoia Pacific Boulevard  
Sacramento, California 95814-0282